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Case Report

Intrathoracic kidney: A rare presentation of ectopic kidney ☆

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ABSTRACT

The thoracic kidney is the rarest form of renal ectopia. Furthermore, it is usually asymptomatic and discovered incidentally. It is seen as a mass in the posterior mediastinum or juxta-diaphragmatic on chest radiography. A computed tomography scan or magnetic resonance imaging is usually needed for a definitive diagnosis. The thoracic kidney typically exits the retroperitoneal space through the foramen of Bochdalek.

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Introduction

The thoracic kidney is an extremely rare renal ectopia, with about 200 cases published [1].

Bochdalek's hernia (BH) is a congenital defect in the posterior lateral diaphragm that allows the abdominal viscera to migrate into the thorax. Adult patients presenting with BH may have associated congenital defects such as an ectopic kidney [2].

Several methods have been used to diagnose intrathoracic kidneys. Plain radiographs are often indeterminate and may confuse this condition with other posterior mediastinal lesions such as Bochdalek hernia, pulmonary sequestration, or neurogenic masses. In the past, intravenous urography was the modality of choice for confirming the diagnosis, but it has

been superseded by ultrasonography and computed tomography (CT) scan in recent times [3].

Case presentation

A 57-year-old female was referred to our center due to suspicious soft tissue density in the lower zone of the RT chest wall in the chest x-ray. The patient reported a history of occasional cough for a month. The patient had no history of alcohol or tobacco use. The patient had no past medical history and was not on any medications. Examination of the patient's chest revealed decreased pulmonary sounds and dullness to percussion in the lower right lung. The patient's vital signs were unremarkable. A chest CT scan without contrast was performed

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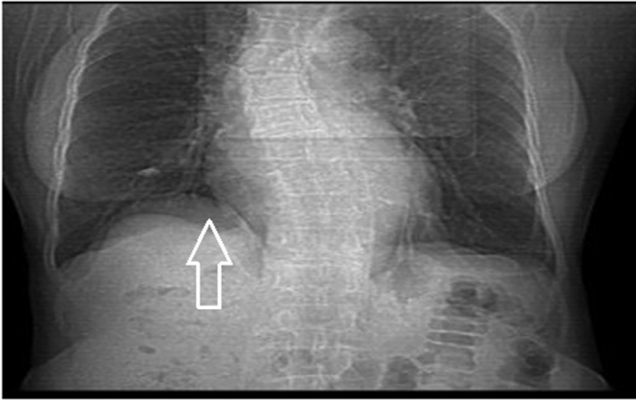


Fig. 1 – Scout image shows an ill-defined soft tissue opacity in the lower part of the right hemithorax (arrow).

in our center for the patient. In the scout image, there was an ill-defined soft tissue opacity in the RT cardiophrenic angle (Fig. 1).

In the mediastinal view, BH was on the RT side with herniation of the RT kidney into the hemithorax. The ectopic kidney was mal rotated but had normal size (Figs. 2-4). No evidence of stone, stasis, or mass was seen in both kidneys. The left kidney was of standard anatomical location in the renal fossa. Mild thoracolumbar Levo-scoliosis was also seen (Fig. 3).

Discussion

Diaphragmatic hernia of Bochdalek (BH) and intrathoracic kidney are rare congenital developmental anomalies. On some extremely rare occasions, these 2 congenital anomalies can be associated with the same patient [2]. BH is a congenital diaphragmatic defect that results in a failure in posterolateral diaphragmatic formation and is corresponded with severe pulmonary complications during perinatal life. However, some patients with this hernia are asymptomatic and exhibit respiratory or abdominal symptoms caused by the herniation of abdominal viscera for the first time in adulthood [4–6]. Typically BHs arise on the left side, contain fat or omentum and rarely the kidney, and do not necessarily lead to symptoms [7]. The literature reports a left-sided predominance for BH, with the left-sided occurrence of the hernia accounting for 70%–90% of cases [8,9]. In right-sided BH, the contents are predominantly the liver, the kidney, and fat. A left-sided hernia may contain the enteric tract, the spleen, the liver, the pancreas, the kidney, or fat [10]. The kidney can be located in the pelvis, ileum, abdomen, or thorax ectopically. The most common location of the ectopic kidney is the pelvis, with the thorax being the rarest. Ectopic thoracic kidney constitutes <5% of all renal ectopias [11]. An intrathoracic kidney is mostly discovered as a posterior mediastinal or juxta-diaphragmatic “mass” by chest radiograph. In infants and children, the thoracic kidney may resemble a hernia of the foramen of Bochdalek, neurofibroma, or a pericardial cyst. In adults, the thoracic kidney should be differentiated from these and other posterior medi-

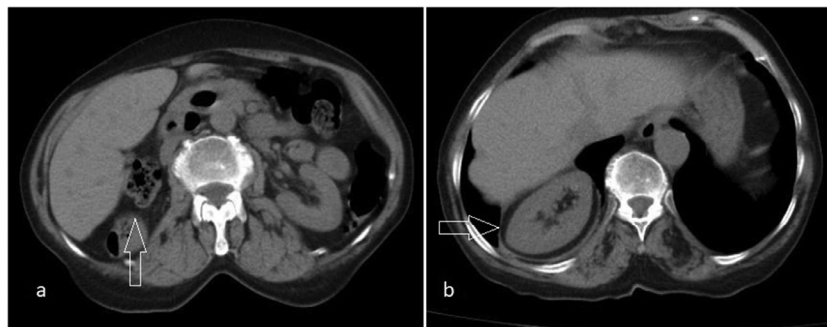


Fig. 2 – Axial CT scan demonstrates no evidence of right kidney in kidney fossa (arrow in a) and the presence of an intrathoracic kidney on the right side (arrow in b).

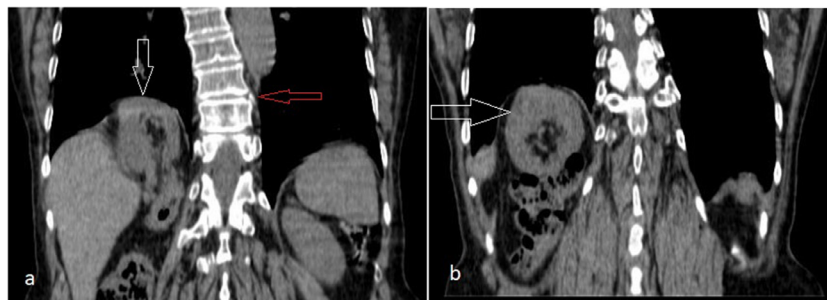


Fig. 3 – Coronal CT scan reveals the presence of ectopic kidney in the right hemithorax (arrows in a and b) and mild Levo-scoliosis (red arrow in a).

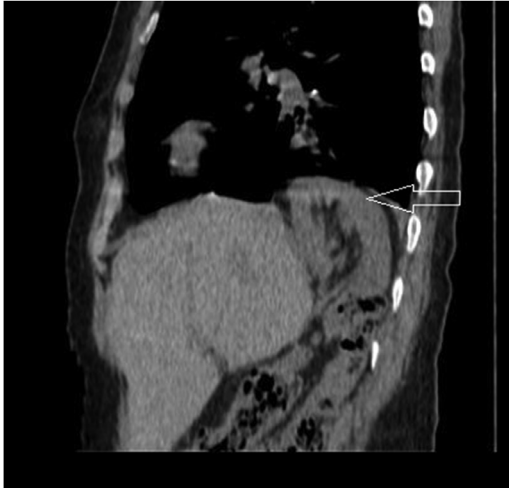


Fig. 4 – Sagittal CT scan shows the presence of ectopic intrathoracic kidney (arrow).

astinal masses and benign or malignant diaphragmatic, pleural, or pulmonary lesions [12].

Imaging studies, including CT and intravenous urography, can differentiate aberrant kidneys from other intrathoracic masses. When the ultrasound findings are equivocal, magnetic resonance imaging-urography has been suggested as the next step of choice [13]. Treatment is not required in most cases of intrathoracic renal ectopia, except in those associated with other anomalies such as vesicoureteric reflux and obstruction [3,14,15]. A thoracic kidney is an asymptomatic condition, and a correct diagnosis of this condition would save patients from unnecessary surgical interventions and image-guided biopsies. Therefore, it must be borne in mind in evaluating patients with suspected elevated hemidiaphragm or masses in the inferior aspect of the thorax. This information should also be available to the patients to enable them or alert their doctor anytime any intervention is contemplated [16].

Patient consent

The authors confirmed that Informed consent was obtained from the patient described in this report.

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